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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/741,827	12/19/2003	Robert N. Phelps	2003P14534US	6172

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Siemens Corporation
Intellectual Property Department
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EXAMINER	
LAMPRECHT, JOEL	
ART UNIT	PAPER NUMBER
3737	

MAIL DATE	DELIVERY MODE
08/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/741,827	PHELPS.ET AL.	
	Examiner	Art Unit	
	Joel M. Lamprecht	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/8/07 have been fully considered but they are not persuasive. Applicant argued: Wright et al. ('285) and the combination with Bunce ('918) do not disclose, to the point where one or ordinary skill in the art would be capable of combination, an analog-to-digital converter between the transducer and releasable connector. The Examiner disagrees that someone of ordinary skill in the art at the time of the invention would not have used the beamformer of Wright et al. with the connector of Bunce. The advantages of the Bunce connector are laid out periodically throughout the Bunce patent and hold weight when combined with the methods and apparatuses of Wright et al. That is the transducer connector of Bunce allows for reduction in connector size, weight, direct mounting, and reduction in complexity. Regardless of the amount of reduction in size, and weight, *the added reduction in complexity while allowing for the flexibility of a mating connector would not be overlooked by one of ordinary skill in the art*, and therefore would have been obvious to include as a feature for one of ordinary skill in the art. Regarding claim 11, Applicant is making assumptions as to at which point the system side and transducer side of the system are housed and aligned.

2. From Claim 11, the processing system need only comprise at least part of a receive beamformer, a housing, and a connector connectable to the receive beamformer all of which can be found in Fig 4B-1. From Claim 16, the "ultrasound transducer" requires a processor connected between the transducer and releasable

connector capable of signal compression. By definition, a transducer is a device which coverts a signal from one form to another (Random House, Also American Heritage). It could also have been acceptable for Wright et al to have an electrically detachable and re-attachable connector before the phase aligner control itself (which was invented at another (later) time, and also reasonably could use its own housing). The transducer portion of Applicant's invention does not stop at the array itself, so Examiner is extending that similar analysis to the transducer of Wright et al. Claims 6, 7, 8, 15, 9, 10, 14, 13, 17, 21, and 19 Wright does disclose a summer, and beamformer which could reasonably be included in a "transducer assembly", Breimesser et al. teach the use of multiplexing and de-multiplexing with switches to reduce load on output lines and streamline the sending of analog signals to an electrical output, claims 10 and 14 are clarified by Bamber due to the rather broad definition of serializer from Applicant's specification ("are application-specific integrated circuits, digital signal processors, bus controllers, field-programmable gate arrays (FPGA), digital circuits, analog circuits or other now-known or later-developed device for providing serial output of data for each of a plurality of channels.") Bamber uses the term serializer in figures 10a/b for providing output of data on multiple channels. Finally part of the beamforming goes on within the "connector housing" of figure 4A and contains a demultiplxer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6-8, 11-13, 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al (US 6016285 in view of Bunce (US 6371918).

Wright et al. teaches of a beamforming receive apparatus (Figure 4a) which includes an ADC, demodulator, summer. The demodulator is used to reduce the number of output lines in comparison to the number of transducer elements. Wright et al. teaches that time-division multiplexing can be used in place of the demodulator (column 22, lines 14-29). Wright et al. does not teach of a detachable transducer cable.

Bunch teaches of a transducer connector in order to detach the transducer assembly from the processing unit.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to combine the Wright et al. beamforming system with the Bunce transducer connector to reduce size, weight and complexity (column 1, lines 36-47)

Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (USPN 6016285) in view of Bunce (USPN 6371918) in further view of Breimesser et al. (USPN 5622177).

Wright et al. teaches of a beamforming receive apparatus (Figure 4a) which includes an ADC, demodulator, summer. The demodulator is used to reduce the number of output lines in comparison to the number of transducer elements. Wright et al. teaches that time-division multiplexing can be used in place of the demodulator

(column 22, lines 14-29). Wright et al. does not teach of a detachable transducer cable and Wright et al. does not teach of a reduction of output lines.

Bunch teaches of a transducer connector in order to detach the transducer assembly from the processing unit.

Breimesser et al. teaches of using multiplexing and de-multiplexing in conjunction with switches (Figure 1, elements WU) in order to reduce the number of output lines. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to combine the Wright et al. beamforming apparatus with the Bunce transducer connector and the Breimesser et al. output line reduction in order to reduce system complexity, weight, and size.

Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (USPN 6016285) in view of Bunce (USPN 6371918) in further view of Bamber (USPN 5538004).

Wright et al. teaches of a beamforming receive apparatus (Figure 4a) which includes an ADC, demodulator, summer. The demodulator is used to reduce the number of output lines in comparison to the number of transducer elements. Wright et al. teaches that time-division multiplexing can be used in place of the demodulator (column 22, lines 14-29). Wright et al. does not teach of a detachable transducer cable and Wright et al. does not teach of a using a serializer in conjunction with the ADC. Bunch teaches of a transducer connector in order to detach the transducer assembly from the processing unit.

Bamber teaches of using a serializer in the ultrasound transducer apparatus. It is well known in the art that a serializer is used in conjunction with an ADC in order to improve output bandwidth.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to combine the Wright et al. beamformer apparatus with the Bunce transducer connector and the Bamber serializer in order to reduce system complexity, weight, and size and to improve output bandwidth.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (USPN 6016285) in view of Bunce (USPN 6371918).
Wright et al. teaches of a beamforming receive apparatus (Figure 4a) which includes an ADC, demodulator, summer. The demodulator is used to reduce the number of output lines in comparison to the number of transducer elements. Wright et al. teaches that time-division multiplexing can be used in place of the demodulator
(column 22, lines 14-29). Wright et al. does not teach of a detachable transducer cable and Wright et al. does not teach of a using a serializer in conjunction with the ADC. Bunch teaches of a transducer connector in order to detach the transducer assembly from the processing unit.

Examiner's previous assertion of Official notice was not disputed and is therefore submitted as prior art in this particular case, that it is well known in the art to use cables of constant length and constant impedance in order to reduce signal noise.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to combine the Wright et al. beamformer apparatus with the Bunce transducer connector and the official notice of constant cable length and impedance in order to reduce system complexity, weight, and size and to increase SNR.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joel M. Lamprecht whose telephone number is (571) 272-3250. The examiner can normally be reached on Monday-Friday 7:30AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JML
8/17/07

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